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Poetry.

TUBAL CAIN.

BY CHARLES MACKAY.

Old Tubal Cain was a man of might.
In the days when earth was young ;
By the fierce red light of his furnace bright,
The strokes of his hammer rung ;
And he lifted his brawny hand
On the iron glowing clear,
Till the sparks rushed out in scarlet showers,
As he fashioned the sword and spear :
And he sang, "Hurra for my handiwork !
Hurra for the spear and sword !
Hurra for the hand that wields them well,
For he shall be king and lord."

To Tubal Cain came many a one,
As he wrought by his roaring fire ;
And each one prayed for a strong steel blade,
As the crown of his desire ;
And he made them weapons sharp and strong,
Till they shouted loud for glee,
And gave him gifts of pearl and gold,
And spoils of the forest tree ;
And they sang, " Hurra for Tubal Cain !
Who has given us strength anew!
Hurra for the smith and hurra for the fire,
And hurra for the metal true !"

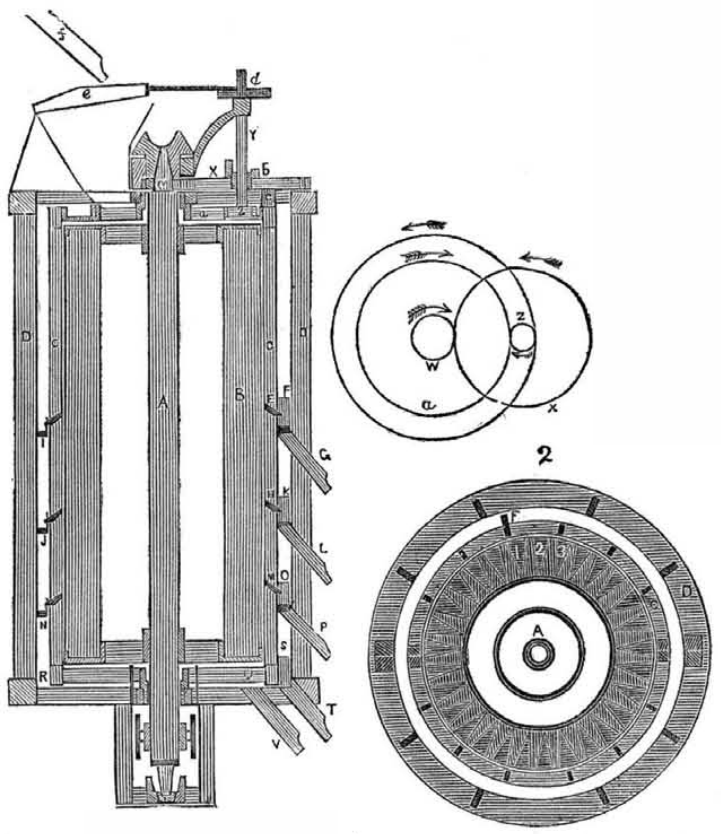
But a sudden change came o'er his heart,
Ere the setting of the sun ;
And Tubal Cain was filled with pain
For the evil he had done,
He saw that men, with rage and hate,
Made war upon their kind—
That the land was red with the blood they shed,
And their lust for carnage blind ;
And he said, " Alas ! that ever I made,
Or that skill of mine should plan,
The spear and the sword for men whose joy
Is to slay their fellow man !"

And for many a day old Tubal Cain
Sat brooding o'er his wo—
And his hand forbore to smite the ore,
And his furnace smoulder'd low.
But he rose at last with a cheerful face,
And a bright courageous eye,
And bared his strong arm for the work,
While the quick flames mounted high ;
And he sang, "Hurra for my handiwork !"
And the red sparks lit the air ;
" Nor alone for the blade was the bright steel made !"
And he fashioned the first plowshare.

And men, taught wisdom from the past,
In friendship joined their hands,
Hung the sword in the hall and the spear on the wall,
And plowed the willing lands ;
And sang, " Hurra for Tubal Cain !
Our stauuch good friend is he ;
And for the plowshare and the plow,
To him our prize shall be.
But while oppression lifts its head,
Or a tyrant would be lord,
Though we may thank him for the plow,
We'll not forget the sword."

The ice was nearly an inch thick at Pittsburg on Monday week.

IMPROVED BRAN SEPARATOR.



This is the invention of E. R. Benton, of Milwaukie, Wisconsin, and it has been deemed one of no minor importance The following description of its construction and operation in connection with the accompanying engravings, will enable our readers fully to understand it.

Fig. 1 is a sectional view, and fig. 2 a sectional plan with the top parts removed in order more plainly to show the parts represented in fig. 1 A, is the shaft. B, the cylinder. C, the inner revolving shell ; and D, the outer or stationary shell. The cylinder is made by framing staves, of the form and in the position represented at 1, 2, 3, &c. fig. 2, into corresponding cast heads. The staves thus forming the longitudinal and working surface, and which may be covered with any kind of material that will make it rough and durable. Air is let into the cylinder, the best at the lower end, through equidistant holes around the centre, and the quantity gaged by a circular revolving slide and spaces between the staves emit it to carry the flour and other stuffs through the several qualities of wire cloth with which the inner surface of the revolving shell is covered. The cylinder is driven by a belt and pulleys, as is represented at the bottom of fig. 1, and the bridge and oil pot for the point and step, and the fixture for supporting the upper journal box of the shaft, are cast in a piece with their respective heads of the outer shell ; thus rendering this part of the machine perfect. The inner surface of the revolving shell is covered with the above named wire cloth. Thus, the space between the top and the beveled dividing ring E, fig. 1, is covered with a quality that will let through little else but pure flour, which falls and by the aforesaid dividing ring is conducted into an endless trough I, attached to the inner and sheet iron or zinc lined surface of the stationary shell, and by the sweepers F, attached to the revolving shell, is brought around and discharged at the spout G. The space between the dividing rings E and H, is covered with a quality that will discharge an inferior quality to the above, which falls as above into the endless trough J, and by the sweepers K, is brought around and discharged at the spout L. The space between the dividing rings H and M, is covered with a quality that will take out the fine particles of the bran, called dusting, which falls as above into the endless trough N, and by the sweepers O, is discharged at the spout P. The space between the dividing ring M, and the bottom, is covered with a quality that will separate the shorts from the bran, the shorts falling to the bottom, or into the endless trough R, and by the sweepers S, is discharged at the spout T, the bran passing down inside of the revolving shell, and by the arms U, of its cast head, is swept around to, and discharged at the spout V. The revolving shell is driven by a combination of gear wheels, thus : " The pinion above on the principal shaft A, fig. 1, drives the wheel X, on the small or centre shaft Y, and the pinion Z, on the last named shaft, drives the projecting coged wheel rim *a*, cast in a piece with the top head, which will turn it the same way with the cylinder, and to turn it the contrary way, the projecting rim *a* must be so large as to circumscribe and be driven by the pinion Z working into cogs upon its inner periphery, as seen by the figures W, of pitch circles, the figures denoting the corresponding pitch circles of the wheels and pinions in fig. 1. *b*, fig. 1, is a circular inclined plane, so calculated as to lift a mallet or hammer to strike upon the end of the revolving shell to keep the cloth from cloging, the blow to be struck upon a block resting upon its upper rim, and projecting up through a corresponding hole in the stationary head, as at C. *d*, is a set of cams on the shaft Y, which shake a wire sieve *e*, that receives the uncleaned and unseparated bran, shorts and dustings from the bolts, as through the spout *f*, the sieve carrying off all coarse extraneous stuff that might injure the machine, the bran falling through the sieve and entering the machine passing between the arms of the upper head of the revolving shell, on to the head of the cylinder.

Substitute of the Potatoe.

Mr. Masson of Paris, has lately grown a new root, called the ulluco, which can it is thought, replace the potatoe. It originally came from Peru, and grows perfectly well in the open air ; the flower is very near the same as that of the potatoe. The part above ground furnishes a very agreeable vegetable, something like the bean in flavor. Three crops of the green part can be obtained in the same season.

RAILROAD NEWS.

Saratoga and Whitehall Railroad.

The completion of the Saratoga and Whitehall Railroad, is already proving a decided benefit to this city. Opening up a rapid communication with Lake Champlain, both for the transit of passengers and merchandise, it adds one more to the great facilities for reaching New York from the North and West. The road is an excellent one, and is conducted in the most satisfactory manner.

A Locomotive Loose.

The Sanduskian, of March 26th, says:—On the 25th, as the Mansfield train came into that city, the passenger and baggage cars were uncoupled, as usual, from the locomotive, some distance back, and left to come in with the force they had acquired ; but when Mr. Morgan the conductor, desired to stop them, he found the brake entirely powerless, and the cars constantly increasing their speed. Notwithstanding this alarming position, the conductor remained at his post, and the passengers at their places, until the cars were stopped by the walls of the depot, which was thereby cracked from top to bottom. The position of the conductor was eminently perilous, as he stood upon the platform between the cars, the roofs of which were smashed over his head. Nobody was hurt. The car was new, everything had been carefully examined at Monroeville, but the defect in the brake was occasioned by the loss of a nut from a bolt.

Safety of Railway Travelling in Britain.

An analysis of the returns of all the railways in operation in Great Britain and Ireland for the last six months, of 1848, shows this result: 112 persons killed, 120 injured; thirty one millions five hundred thousand persons conveyed on the roads, or about one accident to every 140,000 persons—in other words, making the chances of safety 140,000 to 1 for every passenger. The proportion of safety becomes still larger when, on farther analysis, we find that of actual passengers there were killed only 15 and injured 73. Of these only three were killed and 68 injured from beyond their own control; the others suffering by reason of their own misconduct or incaution. Twenty-three persons were killed and five injured by crossing, standing, or otherwise trespassing on the railway.

House's Telegraph New Line.

This line we understand, is to be completed by the middle of June. It runs from Boston to Providence, from there to Springfield, and from thence to New York, via Hartford and Middletown. More than one half of the posts of the entire route are already erected. This line is built for durability, and will, without doubt, be a superior one.

Wood and Coal in the East Indies.

Capt. Johnson and Lieut. Wood of the British Navy, made some valuable experiments in the East Indies, to ascertain the relative value of Wood and Coal, which resulted after a trial of various kinds of wood in favor of Coal.

Lieut. Wood states that " with the very best description of wood the furnaces were replenished once in 7 minutes; with coal, not of the best quality, once in 15 minutes. This gentleman ascertained that coal has an advantage over wood fuel of two to one ; and when the superior performance of machinery driven by coal was taken into account, appeared doubtful which was the more economical to navigate the Indus—with Coal brought from England, or with the jungle growing on the banks of the river. The question which was then (in 1845) one of expense simply, has been since set at rest by the satisfactory discovery of abundance of excellent coal on the very banks of the Indus itself.

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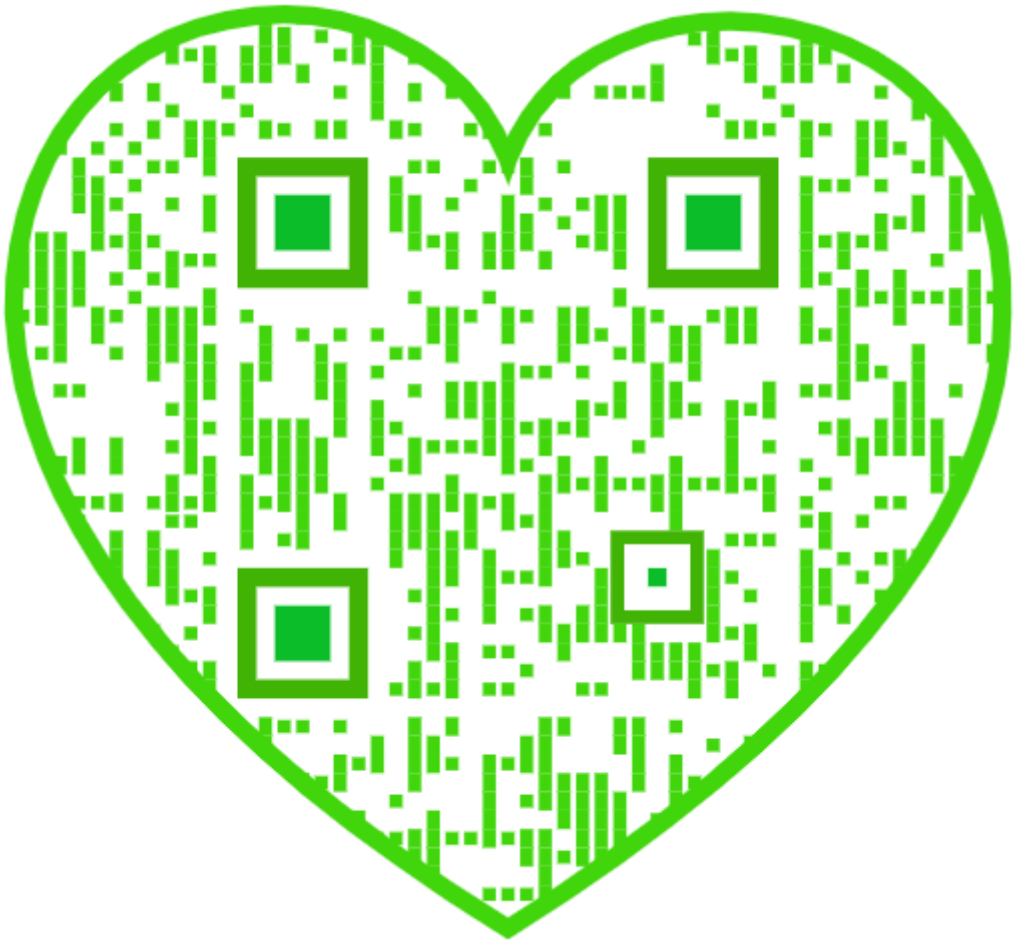

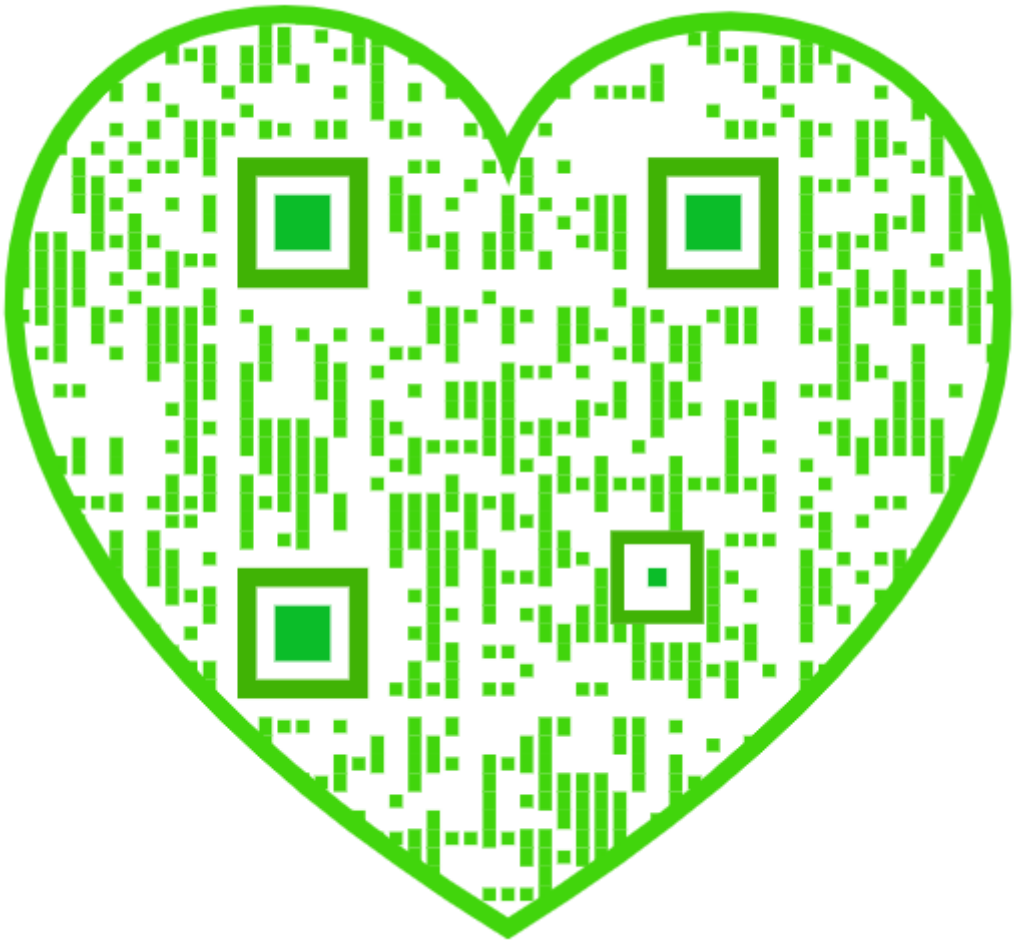

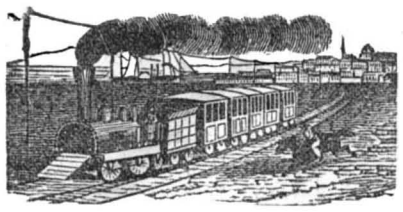

Our Patent Agency.

From the crowded state of our advertising columns for a few weeks past, we have been unable to insert our Patent Agency advertisement, but we wish our patrons to understand that we pursue that branch of our business on an extensive scale as usual and with the accustomed success that has rendered our establishment so extensively and favorably known throughout the country.

More applications for patents are made through the office of the Scientific American, than through any other six agencies in the United States. That is an assertion which we not only make, but can prove.

Inventors who desire to make application for letters Patent should remember that the BEST PATENT AGENCY in the United States is at the "SCIENTIFIC AMERICAN" Office, 128 Fulton St., N. Y.

Great Patent Case.--Blanchard Gun Stock Turning Factory vs. Brown, Eldridge and others.

These were several cases, the trial of which together commenced in Philadelphia before Judge Grier on Monday the 16th of April and were concluded on Wednesday the 25th. The defence set up by all the defendants alike was first, that Thomas Blanchard was not the original inventor of the Turning Lathe described in his patent; that the same was first invented by Azariah Woolworth, of Waterbury, Connecticut; and also that theirs the defendents' machines were not infringements of Blanchard's patent, even if the same were good; that theirs would turn all sizes from one and the same model, and that Blanchard's as described in his specification would not.

Mr. Blanchard and also Mr. Woolworth were present, and both examined as witnesses. Their testimony was corroborated, and it appears that Mr. Woolworth never thought that he invented anything more than working over a model by sections. Mr. Blanchard proved that he had invented and brought into use at Millbury, Massachusetts, his present patented machine for turning gun stocks as early as May 1818, having previously in 1817 invented his machine for turning gun barrels by working over a model. Witnesses were produced who proved that the defendents' machines would not turn a proportional fac-simile without strictly following the directions of Blanchard's specification and that it did describe a mode which was the best and only true mode of performing the same. The evidence also proved that Woolworth's Finishing Machine, which was set up to be prior to Blanchard's, was ever fully completed until March 1820, being nearly two years after Blanchard had publicly exhibited his, and some time after his patent was issued; and that then it was to finish lasts previously cut by a gouge machine.

These suits completely established the novelty, originality and usefulness of Thomas Blanchard's invention over any machine for the purpose of turning irregular forms, either ever known here, or published in any works or seen in Europe.

The Jury came in with the following verdicts in favor of plaintiffs. Against Brown, $249 60; Eldridge, $280 80; Miller, $39 00 and Yocum & Wilson, $176 80.

Spoke and Last Machine.

We would call the attention of our readers to the advertisement of Mr. John Kimball on another page, as one worthy of their attention. Specimens of Lasts and Spokes manufactured by his machine, may be seen at this office.

Opodeldoc.

White Castile soap, cut very small, 2 lbs.; camphor 5 oz.; oil of rosemary 1 oz.; oil of origanum 2 oz.; rectified spirits 1 gal.; dissolve in a corn bottle by the heat of a water bath, and when considerably cooled, strain; add liquor of ammonia 11 oz.; immediately put it into bottles, cork close and tie over with bladder.

Steam Boiler Explosions.

MESSRS EDITORS.—In your paper of Saturday 21st. there is a notice of Steam Boiler Explosions, the causes, &c. in which you mention the explosion of the steamer Defiance, near New Orleans. There are numbers of explosions that are accounted for in as many different ways, and from various causes, such as the locomotive Tahconic spoken of; and if I recollect, the locomotive Richmond, on the Reading Railway, which was supposed to have been caused by lightning; but there are also some boilers, the cause of whose explosion is *certain*, and might be foretold with as much correctness as it is possible to foretell the result consequent upon touching off a charge, placed in a rock for the purpose of blasting it. The Defiance named above is an instance. It had a new boiler, one of Montgomery's Patent, the shell of which was *nine feet in diameter*, made of iron a quarter of an inch thick, with a hole cut out for a steam drum, I believe some *six feet in diameter*!—and this boiler was made to carry high pressure steam probably 100 to 150 lbs. per square inch! The result, in my opinion, is not to be wondered at, and I think any engineer will agree with me in opinion. This is not the only boiler that has exploded from a like cause, to the great destruction of human life and property, yet strangely enough it is considered as a matter of course, as if perfectly right—not even an investigation being made into the matter. Yours,

PUBLIC SAFETY.

Georgia Manufactures and Railroads.

Within a few years past, says the Savannah Republican, the State of Georgia has at one bound placed herself indisputably in advance of any other Southern State in manufacturing enterprise and internal improvements. We have between forty and fifty manufactories with from 100 to 5,000 spindles in each, in operation in this State. Our mines have been partially explored, and we are producing superior railroad iron, castings, marble, lime, at a price so low that is used in considerable quantities to revive the worn out lands of the State.

The eternal fields of cotton, and nothing but cotton, no longer appear in the up-country, except to a limited extent. The cultivation of that staple in the Northern Counties will comparatively cease in a few years, and be transferred more and more to the fertile bottoms of South Western Georgia. The hill sides in the Cherokee region and middle Georgia are now smiling with green crops of wheat and other small grains. There are flouring mills, as the Etowah, Lebanon, Columbus, those in Clarke, and elsewhere, where the wheat is purchased at a liberal price and converted into flour, which has some time since found its way to the Atlantic markets, while some has been exported from this port to Brazil and other countries. The article of Northern flour is now almost banished from this market. One year the Central Railroad conveyed into the interior 6,000 bbls. of Northren flour; the year following it brought down 6000 bbls. of Georgia flour, the upward current being completely turned.

These manufactories and railroads have created home markets. They give employment to the farmer, carpenter, the mason, the tanner, the miner, and in short to almost all who follow the various and devious ways of human industry. The moral and physicial influence of our Railroads in bringing about this new order of things is not sufficiently appreciated. The Up-Country is now no longer a sealed book. The travel on the State Road has probably quadrupled since it was open to Dalton. It will increase vastly more when it is completed to the Tennessee River.

It has been estimated that when the Nashville and Chattanooga Railroad is completed, the Georgia Road will require four times its present locomotive power. Our great work has already paid back to the State the cost of its construction in the shape of a multitude of benefits, beyond the power of calculation, and it is not a daring prophesy to make that in less than twenty-five years it will pay all the debt of the State—principal and interest and relieve her citizens from all taxation.

Some inventors of this city have nominated Gen. Harvey for Commissioner of Patents.

Naphtha.

The very loose application of the name "Naphtha," which originally belonged to volatile hydro carbonaceous liquids found at certain places in the earth, and which has since been adopted for the somewhat similar substance distilled from coal tar, as well as for the very different pyroxylic spirit, is productive of frequent inconvenience. A greater precision in common nomenclature is highly desireable. It would be an improvement, perhaps, if the word "naphtha" were accepted as a generic term for liquid hydrocarbons of ascertained or probably pyrogenous origin (or even without this restriction), and if a special prefix were always used to indicate the nature of every particular instance. Thus earth or native naphtha, schist-naphtha, animal naphtha, &c., would be at once intelligible. Wood-naphtha would designate the interesting hydro carbonaceous fluids of wood-tar, and would leave the term "wood-spirit" to the compound to which it is already appropriated, and which has already as many synonyms as can reasonably be required. Additional epithets would mark the distinct substances obtained from any one source: thus in the case of coal-tar, which yields two sorts of oil having the well marked difference of being, one lighter, the other heavier, than water, there would be light coal-naptha, which terms will be adopted in this paper.

Punishment of Laxity of Discipline.

A short time ago the steamship Forth of the Royal West India Mail Line, was lost on the coast of South America. The circumstances of the wreck of the vessel is generally well known and was considered to have arisen from carelessness. On the 31st of last month a committee of enquiry was held in Southamton, England, before which the evidence demonstrated that there was, 1st. an error in reckoning, which ought to have been counteracted by different observations and attention to the sounding lead, 2nd, a violation of the Company's regulations in regard to frequent soundings, and 3rd, by taking from post one of the look out men. The resolution arrived at was, a laxity of discipline caused her position to be wrongly computed, and her total destruction consequently followed.

The decision of the committee was a recommendation to the Court of Directors of the dismissal of Captain Sturdie and the chief officer from the company's service, the second officer should be reduced to the grade of third officer for one voyage, the third officer reduced to the grade of fourth officer for one year.

How to Make Cream Cheese.

For two cream-cheeses, take six quarts of new milk, and one of sweet cream, to which add two or three spoonsful of rennet, and let it stand until sufficiently firm—spread a linen cloth in a large basin of cold water, lay the curd gently on it, tie the cloth and hang it up to drain four or five hours in a cool place; tnen change the cloth, and put the curd into a vessel, the circumference of a common plate and press it moderately six or eight hours, when it must be taken out, and turned, and split horizontally with a thread; lay the cloth between the two cakes, and again put them in press for 12 or 14 hours; if then pressed enough which can be ascertained by their firmness, keep them in fresh grass a few days, turning them morning and evening. The price of these cheeses, about the fill of a common dining plate, is 25 cents.

Black and White Mouse.

Some student of Princeton College has been gulling the people of Trenton, N. J. with a wonderful account of a mouse changed black and white by Professor Loomis while experimenting with it by the battery in a jar of oxygen. The whole account is published as a most wonderful discovery in the Trenton News, and the cause of the phenomena is attributed to Professor Henry's magnet being suspended in the room. There are some things in the world that are "fixed facts," and there are other things that are fixed falsehoods.

Benjamin Silliman, assistant professor of chemistry in Yale College, and son of the celebrated chemist of that name, has been appointed to the Chair of Chemistry in the Medical University ot Louisville.

Iron Cinder Roads.

A correspondent of the National Intelligencer says that this article surpasses all other materials for the construction of roads, the particles being too heavy to be moved by the wind; and after a rain they rust and cement together, and by use become perfectly smooth and solid and will endure for a length of time. He suggests that the middle of the avenue, not paved instead of gravel, should be covered with iron cinder, which would make a complete finish, at little more cost than the gravel, and surpass all other roads or streets in this or any other country.

As we know a little about such kind of roads we presume that the furnace ashes are meant in the above. They do make a hard compact road after having been well trod, rolled and pounded. But with coarse ashes for an underlayer and sifted ashes above them to the depth of 6 inches, then pound the whole well down, and take our word for it, a road of no common quality will be the result.

A New Manure.

Robert Bryson, Esq. of Cumberland county, about eight miles from Harrisburg, Va. has been experimenting for the last ten years, to make exhausted tan bark available and valuable as manure. Besides his magnificient farm, he likewise carries on the tanning business. Finally, after a great deal of expense, and many failures, he has succeeded in discovering a method of producing from the tan an efficient manure. This is his plan: He has his tan wheeled out on a level piece of ground, and leveled off two or three feet thick. Over this he spreads a layer of two or three inches of lime, and over that again a strata of tan—then a layer of lime, and so on. He lets the bed so prepared remain for two years; at the end of that time he finds himself in possession of a bed of manure, the effects of which upon the land can hardly be surpassed, for the richness of its product, and the durable fertility which it imparts.

Newspaper Stamps in Great Britain.

The number of penny stamps issued for Newspapers in England, Scotland and Ireland during the year 1848, amounted to 82,002,788 and 8,925,792 halfpenny stamps, of which England had 67,476,768 penny, and 8,704,-236 halfpenny, amounting in the aggregate to 90,628,586.

The number of London papers circulating in 1848, amounted to 159, which paid on 863,888 advertisements at one shilling and sixpence each, duty to the amount of £64,791.

The number of provincial papers same time was 238, paying £60,320 duty.

In Scotland the number was 97, paying £17,562, and in Ireland 117, paying £10,342

In Ireland with a population three times more than Scotland, there are fewer papers circulated, while England has no more according to her population, and there is no doubt but the London papers have a large circulation in the cities of Scotland. The above statements will afford evidence of the superior intelligence of the one nation, or if this is not the case, *the poverty of the other*.

Ten Hour Law.

The ten hour law in Maine went into effect last Friday. The law provides that ten hours shall be a legal day's work and no man shall be compelled to perform more except by special contract; from this provision monthly labor and agricultural employments are excepted. No corporation or manufacturer is allowed to employ a minor under 16 more than ten hours a day under the penalty of a fine not exceeding $100.

Quackery.---Red Cloth a Cure for Small Pox.

John of Gaddesden, the Physician to Edward the Second, 1320, our earliest English medical author, had a great taste for an amulet, and an anodyne necklace. He, in his "Rosa Anglica," gives this admirable recipe for the small-pox:—"Immediately after the eruption, cause the whole body of your patient to be wrapped in scarlet cloth, or in any other red cloth, and command everything about the bed to be made red: this is an excellent cure. It was in this manner I treated the son of the noble King of England, when he had the small-pox, and I cured him without leaving a mark."

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Blanchard's Patent.

(*Continued.*)

The longitudinal motion of the carriages is caused by racks add pinions, and the similitude and proportionate variations, of the longitudinal motion between the cutting instrument and friction column are regulated by a graduating horizontal lever, both the same as exhibited in the iron machine of the respondent et. al. last in Court.

The peculiar novelty of the respondent's machine exhibited to the subscriber appeared to be in the formation, suspension and manner of propelling the cutting instrument, to shape the last from the rough block, without finishing.

The cutting instrument consists of a double edged curved knife of about the same curve or periphery as the friction column; it is bolted to a perpendicular iron bar about an inch square, which plays up and down between and through two iron straps fastened to the main transverse carriage. This cutting instrument receives its motion from a pitman attached to a crank put in very rapid revolution, and thereby with great velocity moves the cutting instrument in a straight perpendicular line up and down, which being sharp on both the upper and lower edges, in passing the rough material cuts it both in ascent and descent. Attached to the crank shaft were a fly wheel and a balance weight.

Having now described the elementary features of the parts, the operation of the machine may be spoken of.

A rough block was put in the machine and power applied, which owing to the peculiar motion of the cutter, its imperfect connection with the arrangements of the crank, pointed out to the respondent by the subscriber, and the unstable structure of the machine as it stood, caused not only the machine, but the building to tremble excessively. After some little interruptions occasioned thereby in starting, the operation became more steady and the last marked W. W. H. No. 1, hereunto submitted, was produced from the rough block at one cutting—it not having undergone any finishing process.

Another block already about half cut from the rough was now put in the machine, and the remainder underwent one cutting with the double edged perpendicular knife or cutter. This knife or cutter with the block was then removed, and in place of the aforesaid cutter, to the main transverve carriage was adjusted a rotating cutter, or rasper formed of twenty circular saws of about the same periphery as the friction column, for the purpose of dressing or finishing off the last. These saws were strung on a perpendicular shaft, standing at right angles with the mandrils, and having a balance wheel on it to steady the revolutions.

This rasper or cutter was adjusted to be driven by means of bands and pulleys applied for the purpose, and one of their shafts being too tight, further operation until Monday morning the 26th February at 10½ o'clock was suspended.

At the above appointed time the respondent having put the shaft in running order, begins to exhibit his machine in dressing off the last. Commencing to run the dresser or cutter at necassarily a very high speed, a little delay was occasioned by the breaking of a strap, it being repaired, the operation further proceeded when the strap again broke, was repaired and put in operation,—in a moment it again parted and repaired, and the last was run through one dressing. Being impertect it was run through a second dressing, to near completion, when one of the sockets being simply wood, began to take fire from the friction of the journals, which was prevented by adding fresh oil and discontinuing the operation. The last being at this time finally produced from the second dressing, is marked W. W. H. No. 2, and submitted herewith. This revolving cutter or rasper cuts in the longitudinal direction of the block, not transversely.

From the above imperfect operation of the machine it will appear to the Court probably, as to the subscriber, that the machine in structure and effect is as yet entirely experimental.

The subscriber has read the affidavits of H. Mc Minn, John Howard and Robert W. Jones, submitted under the order of the Court, and though an inspection of the Last marked "turned by J. B. Eldridge, Jan. 31st 1849," and with the letters J. H. may have induced those persons to believe the entire statements of their affidavits to be true, from the appearance of the Last,—yet the subscriber having been able to obtain a still more extensive information in reference thereto, is disposed to believe that the said Last was first turned or cut from the rough block by a double edged perpendicular knife, and then dressed off by the revolving cutter or dresser consisting of a series of circular saw plates, both as herein before described by your subscriber.

Your subscriber has also read the affidavit of the respondent, submitted under the order, and in reference to the machine therein referred to, as having been in Court, known as No. 2, believes that the idea of the cutter approaching and receding in a straight line, did originate with the respondent from his inspection of the said machine, No. 2, though the present machine of the respondent differs from that machine very materially. In the recollection of the subscriber that machine No. 2, fed transversely in sections and by hand, also it fed longitudinally by hand, also it cut the block in only one way of the approach of the cutting edge, and in the recedure of the cutting edge passed over the block without cutting it as it passed. In the respondent's machine as exhibited it continuonsly feeds transversely and by machinery also it feeds longitudinally by machinery (though in exhibiting it the respondent sometimes released the power and fed it by hand) also, in the respondent's machine, the cutting instrument cuts the block both ways as it passes over it. There is also another difference in the elementary operation of the respondent's machine.

In the machine in Court, No. 2, the friction point was continually changing its bearing on the model with the motion of the cutting edge, that is, the cutting motion was not independently of the friction bearing, hence a slow motion of the friction point on the model was not combined with a very high or even a higher state of velocity in the cuttiug instrument; while in the respondent's machine the cutting motion as stated, is entirely independent of the transverse motion or motion to give the inequalities of form, and consequently combines the slow tracing over the model with an independent and very rapid motion of the cutting instrument to cut the block into shape. Whether the respondent has made any new discoveries in these matters of elementary principle, the subscriber is not prepared to suggest to the mind of the Court, he not having the claimant's Patent before him, nor any evidence whatever submitted to him as to the style of the art previous to the granting thereof. He believes however that the respondent has exhibited much creditable skill, ingenuity, and enterprise in producing the machine exhibited to the subscriber under the order of the Court.

And your subscriber doth respectfully report, &c. WILLIAM W. HUBBELL,

February 27th, 1849.

(*To be continued.*)

Extract of Clover.

The Medical Journal states that the Shakers of Canterbury, N. H. prepare a delicate article, which is represented to possess very important properties, by boiling the blossoms of red clover (Trifolium Prateence) till an extract is obtained, of a certain consistency, recognized by them as being the medicinal point and which is particularly used as an external application in ulcerations. Those who have made themselves familiar with this comparatively new preparation, say that it acts like a a charm in altering the condition of the most formidable class of ulcers. Such, in short, are the favorable representations from reliable sources, that hospital surgeons might find it advantageous to use it at once. especially as it is so mild and delicate that no disturbance in the system may be feared, however liberally the extract is applied.

Revenue of Canada.

The estimated Expenditures of Canada for the year 1849 is £565,403, of which 200,000 is for interest on the public debt. The estimated Revenue is £574,640, of which 450,000 is from Customs and 50,000 from public works.

Blow Pipe and Steam Blast.

It is well known that a mode for increasing the intense heat of smelting furnaces by steam was patented a few years ago in Europe. The plan is to inject a jet of steam into the furnace. The trials that were made with this plan produced a very intense heat but it had the drawback of soon injuring the grates, by absorption of the oxygen set free by the decomposition of the steam into the elementary gases.

The invention however is somewhat old, and published in a German work, in 1836. It is described in Ewbank's work page 397. This engraving represents the application of the Eolipile to the smelting of ores, in a portable furnace. In the application of water to fuel, every blacksmith and every naylor knows the virtue of wetting their coal and this principle was known to Pliny, who says that when charcoal is wetted it gives out more heat than when it is kept dry. This Eolipile is nothing more nor less than the blow pipe, so well known to our chemists and mineralogists, and it is believed that the ancients also on particular occasions used spirits and oil in the Eolipile for smelting, whcih shows that they were acquainted with all the arts of the blow pipe. The works of ancient artists in Jewelry are not surpassed by any at the present day and they must have had some excellent way of smelting the refractory metals. It is also said that the ancients were able to keep gold in a liquid state—on this point we have our doubts, though many writers lament this lost art, but an art not yet discovered in our opinion, except its combinations or solution with acids. Some valuable discoveries we believe will yet be made in the application of some new liquids to the blow pipe. The great changes produced by different chemical combinations such as Chloroform and Ether, afford grounds for the view we have stated, and as this is a subject to which we have directed attention, it may be as well to conclude by saying "a word to the wise is sufficient."

The Sahara and its Tribes.

To form a correct conception of the Sahara we must rid our minds of all the loose and fantastic conceptions which have been attached from time immemorial to the interior of Northern Africa. Instead of a torrid region, where the boundless steppes of burning sand are abandoned to the roving horsemen of the desert. and to beasts of prey, and where the last vestiges of Moorish civilization expire, long before the traveller arrives at Negroland and the savage communities of the interior, the Sahara is now ascertained to consists of a vast archipelago of oases, each of them peopled by a tribe of the Moorish race, or its branches, more civilized, and more capable of receiving the lesson of civilization, than the houseless Arabs of the Tell (the mountaineous tract lying between the Great Desert and the sea)—cultivating the date-tree with application and ingenuity, inhabiting walled towns, living under a regular government, for the most part of a popular origin, carrying to some perfection certain branches of native manufactures, and keeping up an extensive system of commercial intercourse with the northern and central parts of the African continent, and from Mogador to Mecca, by the enterprise and activity of their caravans. Each of the oases of the Sahara, which are divided from one other by sandy tracts, bearing shrubs and plants fit only for the nourishment of cattle, presents an animated groupe of towns and villages. Every village is surrounded by a profusion of fruit bearing trees. The Palm is the monarch of their orchards, as much as by the grace of its form as by the worth of its productions; and the pomegranate, the fig tree, and the apricot, cluster around its lofty stem. The lion and other beasts of prey, with which poetry has peopled the African wilds, are to be met with only in the mountains of the Tell—never in the plains of the Sahara. The robber tribes of the Tuarichs frequent the Southern frontier of the Sahara, and the vast tracts of habitable land which intervene between the oases and the real desert; but in the Sahara itself, communications, carried on after the fashion of the country are regular and secure. War is indeed of frequent occurrence between the neighboring tribes, either for disputed territories, or for the revenge of supposed injuries; but all that is yet known of these singular communities shows them to be living in a completely constituted state of civil society eminently adapted to the peculiar part of the globe which they inhabit, governed by the strong traditions of a primitive people, and fulfilling with energy and intelligence the strange vocation of their life.

Chloroform Applied to the Skin.

Some cases have recently occurred in which fatal consequences were attributed to the inhalation of chloroform; surgeons have been turning their attention of late to the employment of this powerful sedative locally, in order to deprive of sensation parts intended to be operated upon. A very interesting experiment of this kind was made at the royal Cornwall Infirmary England, as related by the Cornwall Royal Gazette, by Mr. Spry, on a young man from the parish of Beage, who had been suffering for seven years from a very painful tumor in the sole of his left foot.—The pain had been gradually increasing with the size of the swelling since December last, so that he could not make a single step without greatly aggravating his sufferings. Folded lint, saturated with chloroform, was applied to the tumor, over which a piece of oiled silk was placed, to prevent its too rapid evaporation, and a few turns of a roller were made around the foot to retain the lint in contact with the skin.

After a quarter of an hour had elapsed, more chloroform was added to the lint, but the quantity used was rather less than two teaspoonfuls; and in about half an hour from its first application, it was found that the skin which would not before bear the slightest touch without pain, might now be compressed with impunity. The operation was now proceeded with, the patient betraying no sign of suffering, either by the retraction of the foot, or by the expression of the countenance; and he afterwards assured the gentlemen present, that the only part of the process at which he felt any pain, was in the deepest part of the incision, but that it was so little as not to be worth talking about. Every one is aware of the peculiar sensitiveness of the skin of the sole, and therefore this case was selected as a fair test of the chloroform efficacy when applied externally. The result was highly satisfactory, and the poor man looked on with the greatest composure, not moving a limb while the diseased part was being removed, although he had been taught to expect, before coming to the infirmary, that the operation would occasion great pain, and perhaps even a lock-jaw.

A Fortunate Discovery.

The Abeille, of Yvetot, France, states that a poor shepherd in that neighborhood, the father of a numerous family, which he maintains with difficulty, purchased a second hand Bible last summer, to occupy his evenings.—On turning over the leaves one Sunday, he found two of them pasted together, which he carefully separated, when to his amazement he discovered a 500 franc note, (£30,) and upon the margin of one of the leaves was written—"I collected this sum with much trouble, but having no natural heirs who want it I make you my legatee, you who shall read this Bible." The poor shepherd now considers himself more happy than a king.

They are taking measures in Boston to introduce the Cochituate water into East Boston, laying the pipes across Charles and Mystic Rivers. The estimated expense is about $223,000.

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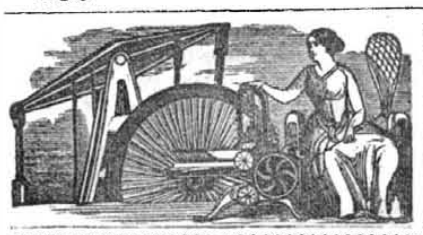


New Inventions.

Ingenious Key.

Mr. F. G. Goffins, of Philadelphia, has invented a Key of a very ingenious character, which in our opinion cannot be counterfeited without a *key* to its mode of operation. It has a number of moveable fingers or projections, which fit into grooves in the lock, to operate it, but those fingers are so combined between two clamps at the top operated by a nut in the handle, that one or more fingers can be projected or drawn in to suit the number of grooves in the lock, whatever that number may be. When the key is not used, the fingers are therefore out of gear kept loose, and a small guide pattern for the lock has therefore to be carried in the pocket to set the number of fingers to the number of grooves in the lock before the key will work at all.—One key of this description can fit a hundred locks, each lock of a different pattern upon the same principle. All that is required is a pocket guide pattern, the cost of which is but a trifle, and the variations of which may be numberless—10,000 varieties, which can all be fitted by the one key.

Improved Planing, Tongueing and Grooving Machine.

Mr. Daniel Stearns, of Rome, Oneida county, N. Y. has just made an improvement for tongueing, grooving and planing, for which he has made application for letters patent.—The improvement consists, first, in a new tongueing and grooving cutter. The cutters can be changed in a moment to a tongueing and grooving knife, or vice versa. The central cutter is moveable, sliding in a slot between and in the two matching knives, and is regulated by a set screw. When the cutters have to be sharpened they can be taken out and all ground at once in line like a common planing iron. This is a valuable improvement. The next is, he sets his tongueing and grooving cutters on a metal belt made of an endless chain of planes, the joints of which fit into grooves in two vertical rollers to carry the belt and planes firmly around to operate upon the edge of the board.

The next improvement is a smoothing knife on the lower edge of the planing horizontal disk, to finish the board, the said knife being of a crescent form shaving off the wood while the other cutters take off the rough, moving across the board like Daniel's machine.

New Coupling Joint.

Mr. Albigence W. Cary, of Brockport, Livingston Co. N. Y., has invented a very neat, useful and ingenious Clasp, well adapted for coupling pipes, in fact for cheapness of construction and for the simplicity of its operation, we think it unrivalled. The invention consists simply in having a small round steel band turned up at the ends and holes drilled in them. Through these holes pass a screw which draws the ends of the band firm together, thus forming a perfect coupling. For lengths of hose it is far more convenient to couple in this manner than by male and female butts, and it is not one half the expense.

Invention for Accountants and Book-keepers.

Mr. A. J. Folger, of Nantucket, Mass. has invented a neat Index box for which he has applied for a patent. The invention consists of a neat box, perforated with 677 slits to receive small strips of cards folded so as to have a shoulder each which suspends it in the slit of the box. A scale of all the letters in the alphabet is arranged on one tier of cards in the side row of slits, and another row of exactly the same letters along the top, at right angles to one another. On the cards are written the names of the Debtors and Creditors with the page of the Ledger on which each name is to be found. Therefore if we want Daniel Webster, we look at D on the side row of alphabetical characters and find it to be the fourth from the top, and then look at W on the top row of letters and pull out the the fourth card below it and on it is to be found Daniel Webster, page 176, and so on with any other name. It is certainly a very cheap and convenient apparatus and no person who has accounts to post up should be without it.

Improvement in the Talbotype.

The Philadelphia Ledger says that Mr. Langenheim of that city, has experimented for some eight years upon the Talbot method of producing pictures and has now brought the invention to such perfection as to warrant him in bringing it before the public. The advantage attending the Talbotype is, that after the first impression, which is taken with an accuracy that is surprising, in about a minute's time, any subsequent number may be taken without any sitting at all, and may be colored like a water color painting, an artist being employed for this purpose.

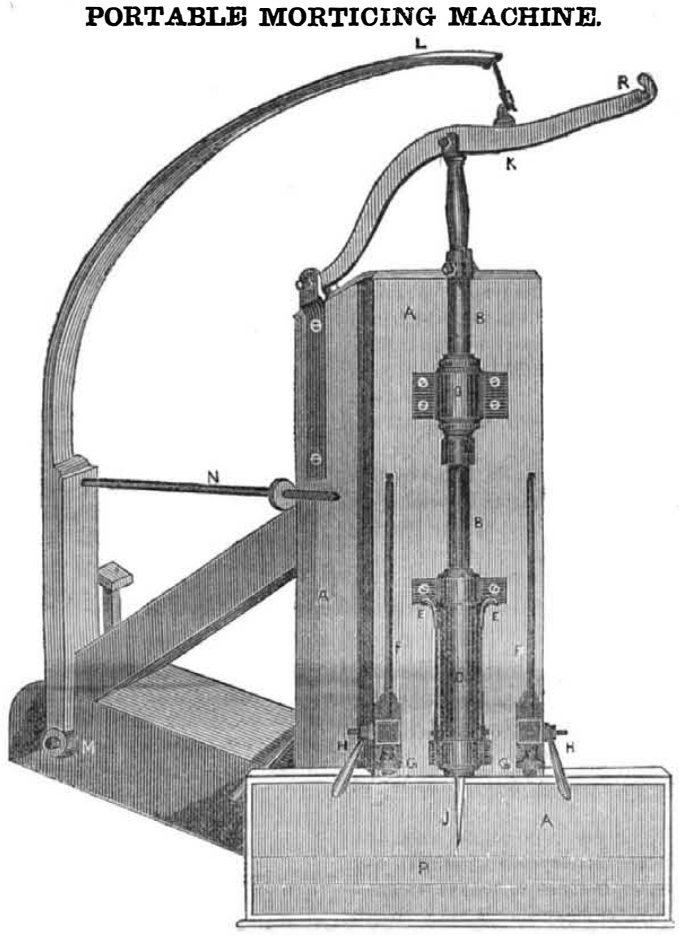
Musical Travelling Bridge.

A Mr. Robison of Cincinnati, has got up the project of a rope bridge on which to run a car across the river propelled by an endless screw. By the labor of one man it is supposed that twenty passengers may be carried across the river for five cents a piece. The inventor intends that the endless screw will also be the means of driving a kind of hand organ on the car, so that the passengers will have the accompaniment of the tune "over the river to Charlie," as well as going over the water on the rope walk.

Ship Lightning Protector.

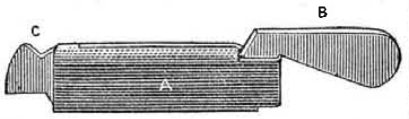
A thin strip of copper, three or four inches in width (the breadth and thickness of course depending on the size of the vessel) set in, up and down the after part of the mast, from truck to kelson—with the addition of branches led along the beams below, abreast the masts, and down the sides to the water, if preferred.

PORTABLE MORTICING MACHINE.



This is a very neat arrangement and combination to operate a morticing chisel or drill, invented by Mr. J. C. Macomber of Plymouth, Michigan. A, is a standard or frame. B, is the drill or chisel spindle. C, is a guide box through which the spindle works. D, is another guide box or tube farther down—both are secured to the standard A. E E, are two side springs, the heads of which pass into openings in D, to act as brakes to arrest the spindle when required. F F, are two metal posts with flat lower heads, G G, to hold the work to be morticed on the table. They can therefore be raised or lowered and retained firm at any point by the set screws, H H, to work off different thicknesses. J, is the chisel or drill. P, shows the transverse section of the table, and the lower A, is a guide board which can be pushed forward or back by set screws behind, for different kinds of work.—M, is a strong beam behind, to which is secured the standard of the spring pole L, which may be made of good hickory or elm. The standard of the spring pole is secured to the frame A, by a screw rod, N, which can regulate the tension of L. The spring pole is secured by a metal loop at K, to the arm R, which operates the drill. This arm or lever may be attached by a stirrup to a treadle below and operated by the foot, thus making it a very easily managed and convenient machine for joiners and carriage makers in country places. The lever R, it will be noticed, is secured to the spindle B, by a flexible joint arm, which enables it to work with ease. The inventor has made application for a patent on some of the combinations herein represented which makes the machine a very desirable one to many men who do a small business.—To such persons it will no doubt commend itself, and every person will at once comprehend its construction and operation by the engraving and the description we have given.

Arnold's Patent Sash Lock.



Among the latest improvements in the way of window fasteners, is the Patent Sash Lock invented by Mr. William E. Arnold, of Rochester, N. Y. of which the above cut is a representation. Of all the various kinds of fasteners now in use, some of which are exceedingly ingenious, we know of none which recommends itself more thoroughly by its simplicity than this. The Lock consists simply of a bolt of iron or brass B, within a sheet iron box A, the latter being mortised into the sash, leaving but a small part of the bolt C, perhaps three-fourths of an inch, projecting, by which it is moved.

About this lock or fastener, there is no complicated machinery, no springs or screws, and the bolt being moved by its weight, forms a complete lock for the window, either up or down. When once in the window they will last until the material of which it is composed wears out. The great fault with many other fasteners, is their liability to get out of order. Not so with the one represented above, for the simple reason that there is no machinery to require fixing or springs to be renewed. Those who know any thing of the perplexity of a bad fastener, will appreciate any invention which promises an improvement.

We understand that Mr. Arnold, who is a gentleman not unknown as an inventor, has now a large number of men employed in the manufacture of his Sash Locks, and that the demand for them can scarcely be supplied.

Nautical Telegraph.

Mr. E. A. Dayton, of Madrid, St. Lawrence Co. N. Y. has invented a new combination of the Chemical Telegraph with the compass of a ship to indicate the variations of the vessel from her course. A small fillet of chemical paper is combined with the compass, and it is drawn forward slowly by clockwork. The fillet is marked with parallel lines and a small steel point in connection with the wire of the battery rests on it. This will make a straight line always if the vessel does not diverge from her track, but every divergance of the vessel from her direct route will be indicated by the point marking either angular or curved lines on the fillet. The invention is a beautiful one and the author of it intends to secure it by patent.

Instrument to assist the Blind in Writing.

Mr. Thos. S. Martin, the Principal Teacher in the Pennsylvania Institution for the blind, has invented and introduced into the Institution, a neat and ingenious apparatus for writing, which we consider very valuable to that very unfortunate class of our fellow beings. The invention is a flat board somewhat larger than half a sheet of foolscap paper, and is covered with soft leather drawn tightly over it. Two catches are placed at one end to hold firmly a small brass plate which is cut into small squares at equal distances apart, there being no less than about a thousand perforations in the plate. When it is desired to be used a sheet of paper is placed on the leather, over it the brass plate is laid, and the writer by the aid of a pencil, pen or bold steel point marks in the squares the letters, the difference in words being secured by passing a square and commencing the new word in the next one. The process is so simple, and the perforated plate is so effectual a guide, that the writer cannot go wrong, and his manuscript has not only a fair and regular appearance, but such as it is almost impossible to gain by any other process.

The advantages of this neat apparatus for the Blind are great. They are enabled to print on paper by a steel point, so that their fellows may read by feeling it with their fingers, which are exceedingly sensitive, they have an acuteness of feeling almost incredible. By it they can also write with a pencil for those to read who have the organ of vision, and it is easily carried about and not liable to get out of order.

Another advantage is, that it excites the faculty of the Blind to write in short expressive words.

Invention for Cotton Manufactures.

The Providence (R. I.) Journal mentions a very useful machine recently invented by Messrs. J. & H. Higgins, of East Greenwich, which trims the surface of cotton cloth of the threads or parts usually removed by the hand and which smooths the cloth whilst it thoroughly performs its office. It is a simple power machine, tended by a boy, and does the work of seven or eight hands, and costs but $100. Successful use in several large establishments in the best proof of its excellence.

American Inventions in England.

Foreign Papers say that an exhibition of four American Pontoons recently took place before the Duke of Wellington, Sir Charles Napier and others. The Duke and several other distinguished military gentlemen present were so satisfied of their superiority, and adaptation to transporting artillery and troops over rivers, that an order was immediately given to forward the pontoons to the seat of war in India; and the East India Company have announced their intention of giving a further order for a large supply of them. It is worthy of notice, thus to find English power using American skill, in carrying out its projects of foreign acquisition, and it is a wise policy in that Government to adopt the best things to suit the ends desired, whether the production of their own, or that of other people.

A New Magnetic Discovery.

Dr. Plucker a Professor of the University at Rome, has discovered a new Magnetic condition in the optic axis of Chrystals.

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NEW YORK, MAY 5, 1849.

Progressive Science.

Many suppose that because we are not startled every few days with some new and wonderful discovery, that the inventions patented every week are of little consequence, and of little value. But it is not altogether by the noise which some new discovery makes in the world, that we can form a just estimate of its value or merits. And upon the same principle of reasoning, we should not form an unfavorable opinion of any discovery or invention, because it is not paraded in flaunting colors before "a wondering world."

The most conspicuous parts of a steam engine are its walking beam and fly wheel, but these are not its essential parts. A steam engine can operate well without the fly wheel or walking beam. But what would the steam engine be without those quiet and hidden lips, the valves. They breathe exquisite music and set the whole huge and ponderous engine of cranks and rods and pumps dancing, and a dance of such vigor too, that the old reel of witches and warlocks in Alloa's Kirk, so vividly pictured by Burns, cannot hold a candle to it. Like the office of the steam valves, so may be the important office fulfilled by some unobtrusive, meek invention patented this week without a pamphlet written by its author to let the world know its merits. We cannot have discoveries every few days, like those of the steam engine, the steamboat, the spinning jenny, the power loom, electricity, galvanism the telegraph and many other landmarks in the history of inventions. No, this we cannot expect, but yet we have many good inventions though they may not be strikingly characteristic. The machine shop of to day presents a wonderful and beautiful contrast to the machine shop of twenty years agone. The factory too, presents the same favorable contrast and these are certain positive proofs of Progressive Science. The progress of discovery is a gradual one: the trimming off a superfluous shaft here, and a wheel, a crank or drum there, produces important though not very striking results, and upon such improvements in the aggregate (and sometimes a very simple one in the minutia of complex machines,) depend the whole economics of the machinery—its profits and losses.

Bridges.

The grandest Suspension Bridge in the world, we suppose, is one recently completed at the city of Pesth in the dominions of Austria. This bridge was commenced in 1840 according to the design and under the directions of William Tierney Clark, an English civil engineer. It extends over the Danube and has a clear water way of 1250 feet, the centre span being 670 feet. The height of the suspension towers from the foundation is 200 feet, but they have 50 feet of foundation in the water.

The sectional area of the suspending chains is 520 square inches of wrought iron, and the total weight of the same 1300 tons. This is the first permanent bridge since the time of the Romans, which has been erected over the Danube, below Vienna; it having been considered impossible to fix the foundation in so rapid a river, subject to such extensive floods, and exposed to the enormous force of the ice in the winter season. It now, however, stands as another monument of skill and perseverance. This bridge was open for the first time, not to an ordinary public, but to a retreating army, on the 5th of January, 1849—by which the stability of the structure was put to the most severe test.

A correspondent writing to the London Times respecting this event, says:—"First came the Hungarians in full retreat and in the greatest disorder, hotly pursued by the victorious Imperialists; squadrons of artillery and cavalry in full gallop, backed by thousands of infantry—in fact, the whole platform was one mass of moving soldiers, and during the first two days 60,000 imperial troops, with 270 pieces of cannon passed over the bridge.' This fact cannot but be of importance to the scientific world, since it proves that suspension bridges, when properly constructed and trussed according to the design of that bridge, may be erected in the most exposed places, while the cost in comparison with stone bridges, is comparatively insignificant.

The above bridge has a gigantic span. The great Menai bridge by Telford, is 560 feet between the points of suspension, and is therefore 110 feet less in span than the new bridge over the Danube. The suspension bridge at Friborg in Switzerland, is a splendid work, but it is not equal to the bridge at Pesth either.

America can boast of some grand bridges, especially has she been famous, perhaps above all nations, for wooden bridges. The colossus over the Schuylkill was a grand structure, and there are some others that we might mention. Our architects have been famous for their skill in rearing wooden structures, and we believe that they were Americans who erected the long bridge of Derry in Ireland.

It is not long since that one of our citizens, Mr. Remington, was astonishing the inhabitants of Britain (and is so yet for aught we know) with his skill in bridge architecture. We believe that he asserted in one of his letters, that "his bridge was well secured by patent at home—in America." We have in vain endeavored to discover his patent claim, so we cannot tell in what particular his invention, if any, consists, but this we know that the Flying Pendent Lever Bridge is not a new invention. If any one will turn to Pope's Treatise on Bridge Architecture, published by Alexander Niven, No. 120 Duane st. this city, in 1811, he will see the design of a bridge spanning the noble Hudson from "Manhattan to Jersey's shore," and a curiosity too, is a view of Fulton's steamboat "walking the waters like a thing of life." (This was the year when the first successful paddle steamboat was constructed in Britain.)

Pope's work is a curious one. He was a scientific and ingenious man and possessed much enthusiasm, with some vanity withal.—His work, however, would instruct some of our architects yet. In it he discusses the principles of the lever and its application to bridge building, with the skill of a master. Abutments, trussed sides and trussed floor ways are all described by him with great clearness and precision.

High and Low Pressure Engines.

As there are many who do not know the difference between these two kinds of engines, we presume that a description of them will not only be instructive but interesting.

The high pressure engine is a simple machine in comparison with the condensing engine. In the high pressure engine the steam escapes into the atmosphere after having forced the piston to the end of the stroke, and as the pressure of the atmosphere is 15 pounds to the square inch, the impelling force is therefore that which is due to the difference of the pressure of the steam and the pressure of the atmosphere. In the condensing engine, the steam after having pushed the piston to the end of the stroke, passes into the condenser in which a vacuum is constantly maintained, therefore the impelling force in this engine is due to the difference between the pressure of the steam above the piston and the pressure of the vacuum beneath it. There is the whole pressure of the steam urging the piston and the pressure of the atmosphere besides. A condensing engine can be worked with a pressure of steam less than the pressure of the atmosphere, but it is very difficult to start the engine unless the pressure of the steam is greater. In low pressure engines the steam may be taken at five pounds pressure above the atmosphere or twenty pounds altogether. A cubic inch of water makes a cubic foot of steam of the atmospheric pressure, and high pressure steam is just low pressure steam forced into a less space—both are the vapor of water, unless there be some chemical change produced by the heat which is not yet explained. In the high pressure engine in comparing it with the low pressure, there is always the loss of the vacuum which will amount to about twelve and a half pounds on the square inch. Steam at the mere pressure of the atmosphere would not urge the piston at all, without a vacuum connected with it. There is an obvious and generally admitted advantage in working steam at a considerable pressure above the atmosphere, even in condensing engines, but in high pressure it is an especial advantage. A cubic foot of steam at 45 pounds pressure, is as effectual as 3 cubic feet of steam at 15 pounds pressure, in other words, the former will do as much when cut off at one third the stroke as the latter will do if applied during the whole.

Improved Method of Preserving Organic and other Substances.

Fig. 1. Fig. 3.

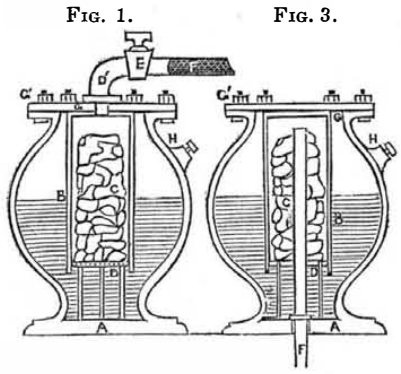
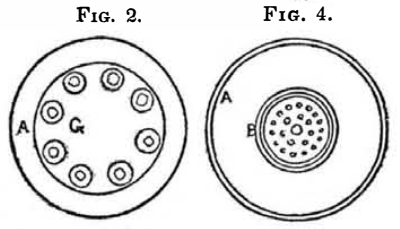


Fig. 2. Fig. 4.



This invention relates to the preservation of substances by supplying certain gases that are non-supporters of combustion, such as a mixture of carbonic and chlorohydric acids, or a mixture of carbonic and vinegar, or pyroligneous acid. The best mixture of the gases for preserving animal matters is a mixture of carbonic and pyroligneous acids in the form of gas. This mixture is preferred because of the small quantity of kreosote in the pyroligneous acid. The way in which these gases are obtained, is to take the common muriatic acid of the druggists weakened with half its bulk of water and pour it in a suitable stoneware vessel containing marble dust, to which had been added a small quantity of kreosote. The gases thus obtained will communicate no taste or odor to the substances that are to be preserved. Common vinegar with a small portion of kreosote added, will make a good gas when poured on powdered marble which will answer every purpose, but pyroligneous acid (wood vinegar) is preferred to this. The above is for the preservation of animal substances, but for the preservation of vegetable substances, carbonic acid gas alone is preferred, and this is obtained by pouring weak muriatic or sulphuric acids on powdered marble, and it is best to let the gas pass through a vessel of clear water to wash it, and in this state the gas is in a proper state for preserving fruits, beer and wines. When meat is to be preserved it is first placed in an air tight box made in any of the well known ways, and fruits and liquors are placed in bottles or other suitable air-tight vessels. The accompanying engravings represent a self acting gas apparatus to make the gas. The same letters refer to like parts on all the figures. A, is the vessel, made of glass or stone ware, to contain the acid. B, is an inner vessel containing small pieces of marble C C, which we prefer to the dust, as the gas will not rush out so fast. These rest upon a false perforated bottom to allow the acid to come in contact with the broken pieces of marble. D, is a bent tube furnished with a stop cock E, which may be joined by a flexible tube F which communicates from the inner vessel B, with an air tight case containing the articles to be preserved. When it is required to change the marble the inner vessel B, can be taken out by removing the flange or cap plate G, which fits over A, around the neck of B, and secured air tight by screws with a strip of vulcanized india rubber between. H, is a small tube or inlet to supply the outside vessel with acid. Figs. 3 and 4, show another arrangement of apparatus from 1 and 2, with only the difference that the tube F, passes down below instead of above. For preserving meat a considerable pressure of gas should be employed, and the gas generating vessels in that case should be made of iron glazed inside to stand the pressure. The meat should also be contained in a stout safe, the pressure upon which may be regulated by a safety valve, and there is no use of an air pump as the gas will force out all the air in the meat safe, if a small orifice is left for that purpose. Small tin cases may be filled with the gas very conveniently, and bottles containing fruit such as grapes, &c. in their natural state. The invention is that of Mr. John Ryan, M. D. of the Royal Polytechnic Institution London, patented by him, and was first published in the London Patent Journal. We believe that it would be very useful to many people in our great country. It is simple and easily made and used, and every person knows the preserving quality of the gas employed. We believe that butter, meats and fruits may be well preserved by this process. Grapes and fruits, we should think, would acquire a slight pleasant spirituous taste by being preserved by the carbonic gas. The principle of the invention is of universal application, and it was this principle of its utility that induced us to call the attention of our readers to the subject.

Light without Combustion.

The National Intelligencer speaking of the Electric Light which has lately made so much noise in London, says that in 1819 they published accounts of such a light having been discovered in Paris about that time, and refers to a letter of Judge Meigs to the Commissioner of the General Land Office at Washington on the subject. An extract from the letter says, "since I wrote you I have seen an account of a discovery of a singular and highly important character announced in Paris by a Professor Meinike, a German probably, viz. an artificial gas confined in glass, assuming, by an electric shock, a permanent, steady light, without heat or combustion!—Here is a grand desideratum, indeed; a candle which can be thrust into carded cotton innocuous—into a cistern unextinguished—which can be placed under one's pillow while we sleep, and pulled out at pleasure. The whale may keep his blubber and the shark his liver," &c.

Without endeavoring to take away the merit of this discovery we would state that Professor Brand claims the merit of this discovery for Sir Humphrey Davy and has publicly made this statement where there are thousands who saw the great chemist produce such a light frequently in his lectures, but then it was only in experiments, without a thought of applying it to domestic illumination.

Patent India Rubber Oil.

Of all the substances of modern application that of India rubber seems to be one of the most extraordinary as well as the most useful. One of its most recent, and probably one of its most powerful applications has recently been made in using it as an oil, or rather in so combining it with oil, that it holds it in such a condition as to render it capable of increased fluidity, at the same time that it has a sort of toughness, or a fibrous quality like glue.—This composition is called "Devlan's Patent Oil." We have noticed this article before and we allude to it again because we hear that its fame is on the increase.

Back Volumes of the Scientific American

A few more copies of complete sets of vol. 3 of the Scientific American may be had at the office, either bound or in sheets. Price neatly bound $2 75, in sheets suitable for mailing $2. Send in your orders early if you desire them filled for we have but a few more copies left, and the number is growing less every day.

Our London Patrons.

We are happy in being able to inform our English patrons that such arrangements have been completed with the London Patent Office that the Scientific American may hereafter be found there. Messrs. Barlow & Payne are agents at 89 Chancery Lane, and will receive remittances on account of the Scientific American from those who may desire to subscribe.

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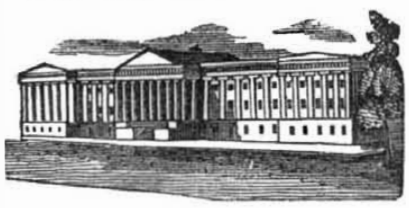

LIST OF PATENTS.

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending April 17, 1849.

To Allen Eldred, of Openheim, N. Y., for improvement in Machinery for breaking and dressing Hemp. Patented April 24, 1849.

To H. M. Villeneuve, of Paris, France, by his adm'r. William O'Connor, of Jersey City, N. J. for improvement which consists in producing a substitute for Wool from Jute. Patented April 24, 1849.

To Epidaurus Irving, of New York City, for improvement in Tanning by Electricity. Patented April 24, 1849.

To Curtis E. Norris, of Peacham, Vt., for improvements in Machinery for Boring Bobbins. Patented April 24, 1849.

To Mary Ann Woodward, of Palmyra, N. Y. for improvement in Fan Rocking Chairs. Patented April 24, 1849.

To John J. DeHaven, of Reading, Penn., for Removable Fire Box for Locomotives. Patented April 24, 1849.

To Charles Foster, of Pompey, N. Y. for improved Forks for holding Rope Belts upon Drum Wheels. Patented April 24, 1849.

To Malcolm McAulay, County of Thomas, Geo. for improvement in Cotton Gins. Patented April 24, 1849.

To William C. Finney, of Fayette Co. Tenn. for improvement in Cotton Scrapers. Patented April 24, 1849.

To Gilbert Hatheway, of Rochester, Mass., for improvement in Saw Mills with cylindrical Saws. Patented April 24, 1849.

To John Whistler, of Carlisle, Penn. for improvement in Shoe Lasts. Patented April 24, 1849.

To Israel Kepler, of Milton. Penn. for improvement in Corn Shellers. Patented April 24, 1849.

To George Fletcher, Sen. of Greensburg, Ind., for improvement in Machines for Polishing Stone. Patented April 24, 1849.

To Paul K. Hubbs, of Holmesburg, Penn., for Filtering Apparatus for Steam Boilers.—Patented April 24, 1849.

To Abiathar Pollard and Simeon Minkler, of Clinton Co. N. Y. for improvement in Obstetrical Supporters. Patented April 24, 1849.

To Nathan Colver, of Boston, Mass. for improvement in Bedsteads. Patented April 24, 1849.

To Wm F. Converse and Jonathan Burdge, of Cincinnati, Ohio, for improvement in Machinery for cutting Screws on Rails of Bedsteads. Patented April 24, 1849.

To William B. Hibbard, of Boston, Mass., for improvement in Machinery for Spinning Hemp. Patented April 24, 1849.

To Samuel Huff, of New Vienna, Ohio, for improvement in Churns. Patented April 24, 1849.

To L. Aimable Prosper Jacques, of Cincinnati, Ohio, for improvement in Frame for Musquito Bars. Patented April 24, 1849.

To Lewis Brown, of Epsom, N. H., for improvements in cutting Cylinders for Bobbins, &c. Patented April 24, 1849.

To Charles H. Peck and Coleman Hicks, of St. Louis, Mo. for improvement in Planing Machines. Patented April 24, 1849.

To David Gay, of Bath, Me. for improvement in Portable Beer Fountains. Patented April 24, 1849.

To Francis G. Woodward, of Worcester, Mass. for improved method of fastening Railroad Switches. Patented April 24, 1849.

To Knight Reed, of New Haven, Conn. for improvement in Boiling Sugar. Patented April 24, 1849.

To Joseph E. Andrews of Boston, Mass. assignor to Edwin Allyn, of the same, for improved Variable Power Capstan. Patented April 24, 1849.

To J. R. Worster, of Baltimore, Md. for improvement in Diving Bells. Patented April 24, 1849.

To David Bonner, assignee of Joseph M. Toy, of Greenfield, Ohio, for improvement in machinery for Sawing Wood. Patented April 24, 1849.

To Cotton Foss, of Painsville, Ohio, for improvement in Machines for making Grindstones. Patented April 24, 1849.

To William T. Barnes, of Buffalo, N. Y. for improvement in Bellows. Patented April 24, 1849

RE-ISSUE.

To Hezekiah S. Miller, of Cincinnati, Ohio, for improvement in Machinery for making Felt Fabrics. &c. Patented March 5, 1839.—Re-issued April 24, 1849.

DESIGN.

To S. H. Ransom, of Albany, N. Y. for Design for Stoves. Patented April 24, 1849.

Poetry of Science.

BY ROBERT HUNT.

THE ELECTRICITY OF A TEAR.

We tremble when the thunder-cloud bursts in fury above our heads :—the poet seizes on the terrors of the storm to add to the interest of his verse. Fancy paints a storm-king, and the genius of romance clothes his demons in lightnings and they are heralded by thunders. These wild imaginings have been the delight of mankind :—there is subject for wonder in them :—but is there anything less wonderful in the well-authenticated fact, that the dew-drop which glistens on the flower, that the tear which trembles on the eyelid, holds locked in its transparent cells an amount of electric fire, equal to that which is discharged during a storm from a thunder-cloud ?

Faraday has shown, by the most conclusive experiments, " that the electricity which decomposes, and that which is evolved by the decomposition of, a certain quantity of matter are alike. What an enormous quantity of electricity, therefore, is required for the decomposition of a single grain of water ! We have already seen that it must be in quantity sufficient to sustain a platinum wire 1-104 of an inch in thickness, red hot in contact with the air, for three minutes and three quarters. It would appear that 800,000 charges of a Leyden battery, charged by thirty turns of a very large and powerful plate machine, in full action—a quantity sufficient, if passed at once through the head of a rat or cat to have killed it, as by a flash of lightning—are necessary to supply electricity sufficient to decompose a single grain of water ; or, if I am right to equal the quantity of electricity which is naturally associated with the elements of that grain of water endowing them with their mutual chemical affinity."

GRAVITATION.

Science has developed the grand truth, that it is by the exercise of this all-pervading influence that the earth is retained in its orbit —that the crystal globe of dew which glistens on the leaf is bound together—that the debris which floats upon the lake accumulates into one mass—that the sea exhibits the phenomena of tides—and the ærial ocean its barometric changes. In all things this force is active, and throughout nature it is ever present. Our knowledge of the laws which it obeys, enables us to conclude that the sun and distant planets are consolidated masses like this earth. We find that they have gravitating power, and by comparing this influence with that exerted by the earth, we are enabled to weigh the mass of one planet against another. In the balance of the astronomer it is as easy to poise the remote star, as it is for the engineer to calculate the weight of the iron tunnel of the Conway, or any other mechanical structure. Thus throughout the universe the balance of gravitating force is unerringly sustained. If one of the most remote of those gems of light, which flicker at midnight in the dark distance of the starry vault was, by any power, removed from its place, the disturbance of these delicately balanced mysteries would be felt through all the created systems of worlds.

LIGHT.

Light is necessary to life ; the world was a dead chaos before its creation, and mute disorder would again be the consequence of its annihilation. Every charm which spreads itself over this rolling globe is directly dependent upon luminous power. Colors, and often, probably, forms, are the result of light certainly the consequence of solar radiations. We know much of the mysterious influences of this great agent, but we know nothing of the principle itself. The solar beam has been tortured through prismatic glasses and natural crystals. Every chemical agent has been tried upon it, every electrical force in the most excited state brought to bear upon its operations, with a view to the discovery of the most refined of earthly agencies ; but it has passed through every trial without revealing its secrets, and even the effects which it produces in its path are unexplained problems still to tax the intellect of man.

FIRST KNOWLEDGE OF ELECTRICITY.

If a piece of amber, electrum, is briskly rubbed, it acquires the property of attracting to it light bodies This curious power excited the attention of Thales, of Miletus ; and from the investigations of this Grecian philosopher we must date our knowledge of one of the most important of the natural forces—Electricity.

If an inquiring mind had not been led to ask why does this curious vegetable product attract a feather, the present age, in all probability, would not have been in possession of the means by which it is enabled to transmit intelligence with a rapidity which is only excelled by that of the " swift winged messengers of thought." To this age of application a striking lesson does this amber teach. Modern utility would regard Thales as a madman. Holding a piece of yellow resin in his hand, rubbing it, and then picking up bits of down, or catching floating feathers, the old Greek would have appeared a very imbecile, and the *cui bono* generation would have laughed at his silly labors. But when he announced to his school that this amber held a soul or essence, which was awakened by friction, and went forth from the body in which it previously lay dormant, and brought back the small particles floating around it, he gave to the world the first hint of a great truth which has advanced our knowledge of a physcial phenomena in a marvellous manner, and ministered to the refinements and to the necessities of civilization.

Antiquity of Gunpowder.

The first application of Gunpowder to the firing of artillery has been commonly ascribed to the English at the battle of Cressy, August, 1346 ; but hitherto this fact has depended almost solely on the evidence of a single Italian writer, coupled with the circumstance that the word " gunners" has been met with in some public accounts of the reign of Edward III.—Upon this point the Rev. J. Hunter has lately communicated to the Society of Antiquaries some new and curious particulars, derived from records of the period, showing the very names of the persons employed in the manufacture of gunpowder, (out of saltpetre and "quick sulphur," as it was called, without any mention of charcoal,) and the quantities supplied to the King just previously to his expedition to France in June or July, 1346. In the Records it is termed *pulvis pro ingenis ;* and they establish that a considerable weight had been supplied to the English army subsequently to its landing at La Hogue and previously to the battle of Cressy ; and that before Edward III engaged in the siege of Calais, he issued an order to the proper officers in England requiring them to purchase as much saltpetre and sulphur as they could procure.

The Age of the World.

Mother Earth, like other ladies of a " certain age," puzzles her sons to discover " the years of her life." The common notion is that she is some five or six thousand years old speaking of her, that is, as the abode of Man. But what will the old women say to the editor of the Ethnological Journal, who, in his August number, contending that Britain was a civilized country at some remote period anterior to the Roman invasion, coolly observes : —" That this civilization should have so completely vanished before the days of Cæsar, is no degree surprising : the mightiest empires have been utterly swept away, and the most important histories completely forgotten, in a less space of time than 'nine thousand years.' " Yes, indeed the world may be excused, without the reproach of carelessness, for dropping a page or two of its history in ninety centuries.

LITERARY NOTICES.

The New York Pathfinder is one of the most valuable business journals in this city.—When this publication commenced we wished it success, but feared that the public would not appreciate its usefulness. But it has now nearly completed its 3d volume, and has a circulation nearly, if not quite equal to that of any other daily published in this city. It is an excellent medium for business men to advertise through, as you can scarcely step on board a steamboat or railroad car without finding numbers lying about for the attention of travellers. The articles are well written, and are creditable to the editor (Mr. Charles S. Todd) a very modest, unassuming gentleman.

The Pathfinder is also published in Boston by the same proprietor, Mr. Bartlett.

The May number of Godey is beautiful indeed, and it will be hardly necessary to say one word in its favor. " The Rose and Lilly" by Ellis, is a beautiful engraving, and is followed a colored plate, of " Children's Fashion" by Pease. " Thirty five," before or after marriage, we are not informed which, by Mrs. Hall the sweet poetess. " The Pilgrims to the Shrine," a scene from Mount Calvary. which is very solemn and impressive. This number contains 29 distinct engravings, all highly creditable to the Artists skill. The contributions are exceedingly interesting, from the pens of well known authors. Persons wishing this work, can find it at H. Long & Bro. 46 Ann Street, also a general assortment of all the new publications.

Holden's Dollar Magazine for May, as usual is an excellent number, the embellishments are " The Port of Honolulu, in the Sandwich Islands," " The Welcome Home," A Portrait of Father Mathew the great apostle of Temperance, and a faithful likeness of the eloquent " Dr. Durbin" accompanied by a well written biography.

The literary contents, for originality is not surpassed by any other Magazine published. Holden indulges very little in wild romance, and his selections are calculated to instruct as well as amuse.

Some clever author has commenced " Dissecting the Doctor" and he really turns the tables upon them in a capital manner. " The Toilette and its devotees" is a very common sense review of the distinguishing feature between " man and the lesser orders of creation." We commend this No. to the particular attention of his readers, they will find much to interest them.

The Western Continent is the title of a large and ably edited weekly Literary Journal published in Baltimore at $2, per annum.

The Literary Union, an " Independent in everything," Journal has been sent us by the publisher, W. W. Newman, Syracuse N. Y.—We should think it a very interesting and useful paper, and not a wit behind literaries of ten times its age.

No. 15 of the Encyclopedia of Chemistry is just issued by Messrs, Carey & Hart of Philadelphia. Those who desire to possess a comprehensive and compact work on Chemistry as it is, in its present advanced state, will find this work the very thing to suit them.

Charms of Rural Life.

Besides the benefit of mental discipline derived from the study of nature, for which agriculture opens as wide a field as any other pursuit, the charms of rural life are unalloyed by the reflection of ill-gotten gains, and uncontaminated by immoral influences. The farmer has no occasion to review with remorse, a life of injustice to his fellow-men, or mourn the loss of fortunes accumulated by an occupation almost necessarily dishonest. The lawyer looks upon his briefs prepared for unjust causes ; the physician upon the emaciated forms of his patients, and the speculator upon the wealth amassed from the ruined fortunes of others, with the humiliating consciousness that they have not in all instances, returned an equivalent for what they have received. But the cultivator of the soil may pursue his calling with the cheering reflection, that an all-bounteous Providence has rewarded his efforts, and through him bestowed more of happiness upon his fellow-men.

A New Aristocrat.

The heir of the Earldom of Angus (a title of the Douglass family) has been discovered to be an old gardener at Capetown, who calls himself Dalgleish. The Queen means to give him the Earldom, and its income of £30,000 a year.

He should get a bit of a decent farm, and the rest of the estate should be given in 50 acre lots to the tenants and poor of the parishes.

Many inventors have written to us to advocate a mechanic for Commissioner of Patents, as a right.

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TO CORRESPONDENTS.

"J. G. P. of R. I."—The plan of your apparatus does not possess novelty sufficient to warrant you in spending money on an application. Machines for this purpose, constructed upon the same principle as yours, have been used before. They are, however, very excellent for the purpose intended.

"J. B. of S. C."—You would require an engine of ten horse power to drive the mill stones, which could be purchased complete for $1200 in this city, having one of Bentley's tubular boilers attached. We can furnish you mill stones 4 feet in diameter, for about $145. All the improvements known to us in this branch of business have been published in the Scientific American.

"W. W. of N. C."—We are informed by Mr. K. that second hand rolling mills are very hard to be found. New ones can be purchased for $11 per foot of a superior manufacture. Mr. F. promised to write you the particulars about the expense, &c. of repairing the burnt one. Those tickets will be purchased as soon as the agents will sell them for "the ready go down." Don't be uneasy, we are wide awake at all times here, and will attend to the business early.

"C. B. J. of Mass."—You have surely not given your attention to the correct proposition, "two parallel lines," not geometrical lines, it should be, as all kinds of lines are geometrical lines. If two parallel lines meet then they are no more parallel, that's all, for parallel lines must ever be equidistant to be parallel. Be sure and have your propositions right.

"A. H. of Pa."—Brass is made to adhere to iron by first tinning the iron. Steel is softened by decarbonizing it. You will find the process described at length in vol. 41 of the Transactions of the Royal Society. If there is a library in your place, this work should be in it. We can give you the process if paid for writing it, as it is somewhat long. Send us five dollars.

"J. K. of Ct."—Inventions are always arranged in classes, and taken up in their order. There is no certainty at what time an application will be examined. Patents are issued sometimes in 2 months, and sometimes 6 or 7 months elapse before any examination is made. We should think it high time you had some knowledge of its results, as you say the application was filed in June '48. Mr. Burke has always been prompt in acknowledging the receipt of the papers and models forwarded from this office.

"H. C. of N. J."—Your plan might be made to operate on a very small scale, but we should consider it a dangerous undertaking to pass over the Rocky Mountains. We should rather see an experiment made with a load of mice over a mole hill than to encourage a party of human beings to attempt to ascend the rugged steeps of Popocatapel in a train of Railroad cars.

"W. C. H. of Ala."—We have no confidence in the statement, and we would advise you not to spend time or money, until better evidence is brought forward to sustain it.—You will find the notice in No. 20 Scientific American.

"T. & T. of Ky."—We prefer to advise you by letter, which will be attended to immediately. $2 received on account of subscription.

"A. B. W. of S. C."—Since the receipt of yours of the 10th inst. we have been on the look out for such a work as you describe; if we meet with success you will hear from us hereafter.

"H. J. C. of Wis."—Accept our thanks for your interest in the Scientific American. The subscribers names are properly entered for 6 months each. You had better send the balance of the subscription by express from Milwaukie. $57 received.

"Mrs. D. of N. Y." "J. H. of O." "S. C. care of T. & F. of Ct." C. M. M. of Pa." and "A. J. F. of Mass."—Your papers have been sent to you for signatures. As soon as you have signed and had them otherwise properly executed, please return them for our further action.

"W. M. of Geo." "H. D. F. of Pa." "R. S. T. of N. H." "R. Y. F. of Vt." and "S. G. G. of Mass."—Your papers have been safely lodged in the Patent Office since our last issue

"J. H. of Mass."—Why do you not send us the balance of our funds, so that we can file your application without further delay?

"E. J. of Mass."—In a few days you shall hear from us. Your business is progressing.

"A. H. of Me."—Pardon our delay and look for your papers early next week.

"J. S. of Pa."—Ten dollars more received.

"C. R. W. of Ky."—The Clevis which you describe is quite old. No person can get a patent on it. Your subscription expires with No. 39.

"A. & J. J. of N. Y."—Will appear in our next.

"W. H. P. of Va."—We shipped your business in due time, and gave the particulars by letter of the 27th ult. You can draw on us at sight for $250 through you agent here and the balance will be appropriated as you have already directed.

"C. H. T. of St. Louis."—Yours of the 17th inst. reached us in due time but no pamphlet. You had better send us a drawing of the safety gauge and we will write you the expense of an engraving.

"W. H. S. of Del."—Your circulars were forwarded on the 1st inst. by Express.

"G. B. M. of Texas"—Your model and funds came safe. Shall write you soon.

"C. W. T. of Mich."—The books referred to can be sent by Mail with safety

"A. B. W. of Mass"—The drawings of your Sewing apparatus were received duly and have been thoroughly examined. We think your machine far surpasses all others that we have become acquainted with, for accomplishing the end sought for, and we think your success inevitable. $20 received. Your request shall be speedily complied with.

J. Armour's model has arrived. What shall we do for you?

Mr. G. W. Van Vleck, of Belfast, or Syracuse, will please report himself immediately. All persons are cautioned against paying money on our account to L. Van Vleck. We have reason to suppose that he is soliciting subscribers in the name of G. W. Van Vleck.

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Vicksburg, Miss. - -	J. B. Hayes.
Williamsburgh, - -	J. C. Gander.
Warren, Ohio, - -	C. J. Van Girder.
Webster, Mass. - -	J. M. Shumway.

Advertisements.

FOR SALE.—A NEW AND VALUABLE PATENT.

THE subscriber has just received letters patent for a Machine for making Lasts, Spokes, &c.—The principle of the machine is such that a large number of spokes may be made at the same time, with only one model. If the last or model be for a right or left foot pairs will be produced at the same time. The first and only machine after this patent has been in constant use about one year and a half, and makes the most perfect work that has ever been produced by a model (a sample of the work may be seen at this office.) A machine with 10 cutters will produce 5 pair of lasts or 10 spokes at one and the same time, and would require about the power of two horses, and would produce about 1000 spokes per day and 500 lasts. The subscriber will dispose of the whole patent or a single State. In the application for a patent the attention of the Commissioner of Patents was called to that of Thomas Blanchard to show in what way it was unlike his machine for turning lasts and spokes, that was granted in 1819 and extended in 1848. The subscriber is and has been prepared for a long time to have the question tested before the proper tribunal.

JOHN KIMBALL,
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PRIZE ESSAY.

Essay on the Patent Laws.

WITH SUGGESTIONS OF ALTERATIONS AND ADDITIONS FOR THEIR IMPROVEMENT.

By Edmund Maher, Civil and Mechanical Engineer, Washington, D. C.

(*Continued.*)

The great expense attending this appeal, moreover, in the form of government, and counsel fees, and the other necessary outlays incurred, apart from his unwillingness to leave the decision of the question to a person whom he regards as unqualified for the task, from ignorance of the subject to which his invention belongs, deters the inventor, who is generally limited in means, having in most cases expended his all in the perfection of his invention, from availing himself of this alternative of the law, and causes him to abide by the decision of the Examiners expressed through the Commissioner, although conscious in his own mind that it is unjust.

By specifying in clear and exact terms in this section of the law, what shall form a patentable subject, and striking out all portions contained in the whole code giving an extreme discretionary power to the Examiner and Commissioner, to reject an application for a patent for an invention, possessing wholly or in part a novel combination, or arrangement of known parts, or a difference of form from any thing heretofore discovered, or in fact containing any material variation from a previous invention, because it is not in their opinion useful, or does not accomplish a beneficial object, over such previous invention; and otherwise restricting the powers of said Examiners, and Commissioner, many useful inventions that have been rejected, and consequently lost to the world, would have been patented, and the litigation and consequent trouble and expense, occasioned by appeals to the appellate tribunal, have been prevented. If upon a thorough examination of an alleged invention, by the proper tribunal, it is found to possess a patentable difference, an exclusive governmental privilege or right, to hold and enjoy such difference, of whatever character it consists, as his own property, with the same reservations as other property is held, should be extended to the inventor, without regard to its usefulness, except in cases of difference of material, or others of a like nature, where the effect or result produced is apparent to the general understanding of all—or is in opposition to well established principles or rules of the branch of the arts to which the alleged invention refers, or the alteration made is designed to evade an existing patent, on which it professes to be an improvement. In all cases, a discretionary power to reject a patent should be invested in the Commissioner and Examiners. Many of the greatest inventions ever produced have met upon their first introduction with either adverse opinions as to their practicability or utility, or lukewarm receptions from scientific men, tending to influence and prejudice the public generally against them, and have from such causes been delayed or forestalled in their developement. In proof of this assertion, I might instance the cases of the Magnetic Telegraph, and the application of Steam to river and ocean navigation, in which delays of many years, occasioned by erroneous opinions formed in the public mind, through the agency of adverse opinions of persons professing to be versed in the mechanic arts and sciences, were caused to intervene between the time of their conception in the minds of the respective inventors, and their introduction to practical and general use. Scientific men, without practical experience in mechanics, are generally governed in their opinions by what they have read in books, and are only acquainted with the effects likely to be produced by a new invention, by rules bearing on the subject laid down in books, (which are in many cases nothing more nor less than fallacious opinions of book authors,) without understanding the nature of the several parts, and operating causes, from practical observation, and hence, if a problem is given them to solve, they invariably apply these rules to the exclusion of all others, to elucidate the result. The utility and practicability of an invention, cannot be fully ascertained, until such invention is subjected to a suitable experimental test, and if the producer of any discovery or invention, of a patentable nature, believes it to be useful, and desires authority from the government to hold it as his own property, previously to subjecting it to practical operation, he should be granted this conferment or privilege, and in case of the alleged improvement proving otherwise, he alone will suffer from the result.

All inventions and improvements more or less, have their origin in new combinations and arrangements of known parts—differences in construction and form, or new modes of operation in the several branches of mechanics and the arts, and in order that inventors, who are generally practical mechanics, should have a fair and candid examination and decision of their claims to originality, in their alleged new combination, arrangement, or other patentable peculiarity or difference from any thing of a similar nature, the Board of Examiners should consist of persons of acknowledged ability, in the particular branch of the mechanical, or chemical arts, allotted to the department, to which they are respectively assigned by the Commissioner, and one half of their number at least, should be thorough bred mechanics who have served a term of apprenticeship, of at least three years with some mechanic, or mechanics, so as to become thoroughly and practically acquainted by their own labor and observation, with some department of the arts embraced in the branch to which they may be assigned. In fact, a proper numerical representation of intelligent mechanics in this department of the government, where their services could be brought to such good account, is not only demanded, by reason of their peculiar fitness for the trusts and duties reposed in the Examiners, but also as a return for the shameful neglect of the government towards this industrial class of citizens in the bestowal of its patronage, notwithstanding they contain within themselves the nation's wealth, and contribute in a greater degree than any other portion of the community to its increasing growth, in the various branches of commerce, agriculture, manufactures and science at home, and honor and fame abroad.

Mechanics being virtually excluded from all other departments of the government, the assignment to them of the offices in this mechanical department, which has its origin and present elevation from their exertions, is no more than a just and merited return for their labors, and would at once give an impetus to thought in the minds of those of our citizens who possess the natural attributes and genius essential to the production of original and useful ideas in mechanical and chemical philosophy, by the assurance that the results of their thoughts would be examined by men impressed with their importance by practical experience and observation, who sympathise with their efforts in elucidating and bringing to light the hidden treasures in the various elements of the mechanical professions in which they have themselves toiled, and are ready and willing to encourage and assist them to the extent of their powers, by the conferment of adequate security in the original conceptions of their brains. All the Examiners should, moreover, be possessed of a variety of scientific knowledge, co-extensive with the diversity of the mechanic arts, and other subjects, legitimately coming within the scope of Patent Laws, and should in fact, possess all the necessary attributes required to properly carry out the trusts reposed in them.

For the more perfect organization of the Board of Examiners, with a view to the correction of the evils arising from its present imperfect composition, and to more clearly define the powers and duties of said examining board, and what shall form proper subjects for patent, I propose the following amendments to the existing laws.

1st. Strike out all relating to appointment of Examiners in the code, and embody, in suitable legal phraseology in lieu thereof—

The Commissioner of Patents may, with the approval of the Secretary of State, appoint eight examining clerks, at an annual salary of, $1500, who shall be divided into four committees of two each, whose duty it shall be to examine and pass judgment upon applications for patents, for improvements in the mechanic arts, in the particular branch to which their respective duties have been assigned; and those other Examiners, who shall be denominated the chief board, at an annual salary of $2500, whose duty it shall be to examine and pass judgment upon all rejected applications, and perform other duties hereinafter stated. And if the respective members of the first mentioned committees, concur in the prayer, wholly, or in part, of an applicant, whose case is before them for a patent, a patent shall forthwith issue, but if said committee shall reject said petition, or any part of the same, they shall state fully in writing the causes of objection, and reasons, and authorities, for so doing, and shall hand up such written objection, with the papers, drawings, and model, and all the information in their possession, bearing on the subject, to the chief board of examiners.

2d. The chief board shall consist of three examiners, whose principal duty it shall be to examine, and pass judgment upon all rejected applications. They shall first give notice to the applicant of the rejection of the application, and appoint a day, as early as will suit the applicant, and the members of the revising board, to hear the case, and the said applicant may appear by counsel, or in person, or in both, and be at liberty to overcome all objections, if in his power, and to produce all needful testimony to substantiate his rightful claim to a patent, and it shall be in the power of said revising or chief board of examiners to grant or reject the application, on second full hearing, and said decision shall be final. Said decision, to make it legal, shall receive the approval of a majority of the members of said board, and shall with all its views, be written out and recorded, together with the views advanced by the first, or inferior board of examiners, in a book kept for the purpose, which shall at all times be accessible to the public, either for examination, or for the purpose of transcribing copies for publication.

3d. No person shall be eligibie to the first mentioned, or inferior board of examiners, who is not fully conversant with the Patent Laws, with common law, in its applicability to cases of litigation, in conflicting claims, to priority of invention, and other cases requiring such application, and who is not familiar with the advanced state of improvements in the various branches of the mechanical and chemical arts, coming within the scope of their respective duties. One half their number should, also, be thorough-bred mechanics, who have served an apprenticeship of at least three years with some mechanic, or mechanics, so as to become thoroughly and practically acquainted, by their own labor and observation, with the department of the mechanic arts, involved in the division or committee to which they may be assigned.

4th. No person shall be eligible to the board of chief examiners. who does not possess the same capabilities, as those required of the members of the first, or inferior board, and mentioned above, and one of their number should be a practical chemist, capable of subjecting to experimental test, or analization, any composition of matter, or other alleged discovery of a chemical nature; and the remaining two members of said board, should be, like one half the members of the first mentioned board, thorough bred mechanics, who have likewise served an apprenticeship of at least three years, in some mechanical branch, and are otherwise, by experience, and acknowledged ability, and soundness of judgment, possessed of the necessary qualifications for the duties coming within the sphere of their action.

5. All applications for patents, that have been heretofore rejected, may be revived and revised, and again entered, with, or without alterations and additions, to modify and restrict their former claims, or to embrace improvements made, subsequent to the original presentation of their claims for adjudication, upon the payment of full fees, and may in all respects, be treated as if they had not been formerly made.

6th. All novel differences, in mechanical or chemical combinations, arrangements, constructions, or modes of operation, that, in the opinion of the inventor, increases the usefulness or efficiency, or in any manner betters them for the object of their design, from the originals, shall be legitimate subjects of patent. Such changes may consist, in the material of which they are composed, or in the manner of construction or mode of application, or difference in combination, or form, forming in their perfection, a machine, compound, form or composition of matter, capable of producing different and more beneficial results, from such previous invention; provided, however, that the examiners be allowed a discretionary power, to patent or reject an application for a patent, for an alteration in a former machine, or composition of matter, or other alleged invention, where it is clear that such alteration was designed to evade an existing patent, or where the result designed to be accomplished by such invention, is in opposition to well established principles or rules of the arts, to which it appertains, or where the alteration, forming the subject of the claim, is a difference of material, in which latter case, the inventor or discoverer thereof, should fully state the beneficial objects, effected by the change, and the examiners should make such benefits a *sine qua non* to the issuing of a patent, for such difference of material.

7th. Any person obtaining a patent, for a new machine, or other invention, or discovery, of a patentable nature, that shall be found to involve parts of other machines or inventions, already patented, shall be held liable to pay to the patentee of such invention or his representatives, such a proportionate patent value, as their relative importance has to his invention—such relative value to be determined by a jury to be appointed by the proper officer of the United States District Court, on application of such person, whose patent is used, and such decision shall determine, for said judicial district. Said jury may direct a gross sum to be paid, or shall direct a specific sum, for each machine, manufacture, instrument, compound, or composition of matter made—the costs, arising from this adjudication, to be paid by the parties, in proportion to their respective interests in the article, as determined by jury.

(*To be Continued.*)

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